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Brütsch

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(54) **BUS BAR BLOCK**

(75) Inventor: **Friedbert Brütsch**, Tuttlingen (DE)

(73) Assignee: **Friedrich Gohringer Elektrotechnik GmbH**, Triberg (DE)

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H02B 1/20 (2006.01)

(52) **U.S. Cl.** **361/648**; 361/622; 361/624; 361/650; 307/147

(58) **Field of Classification Search** 361/611, 361/614, 622, 624, 627, 637, 639–641, 648, 361/650, 652, 655, 657–658, 673; 307/147
See application file for complete search history.

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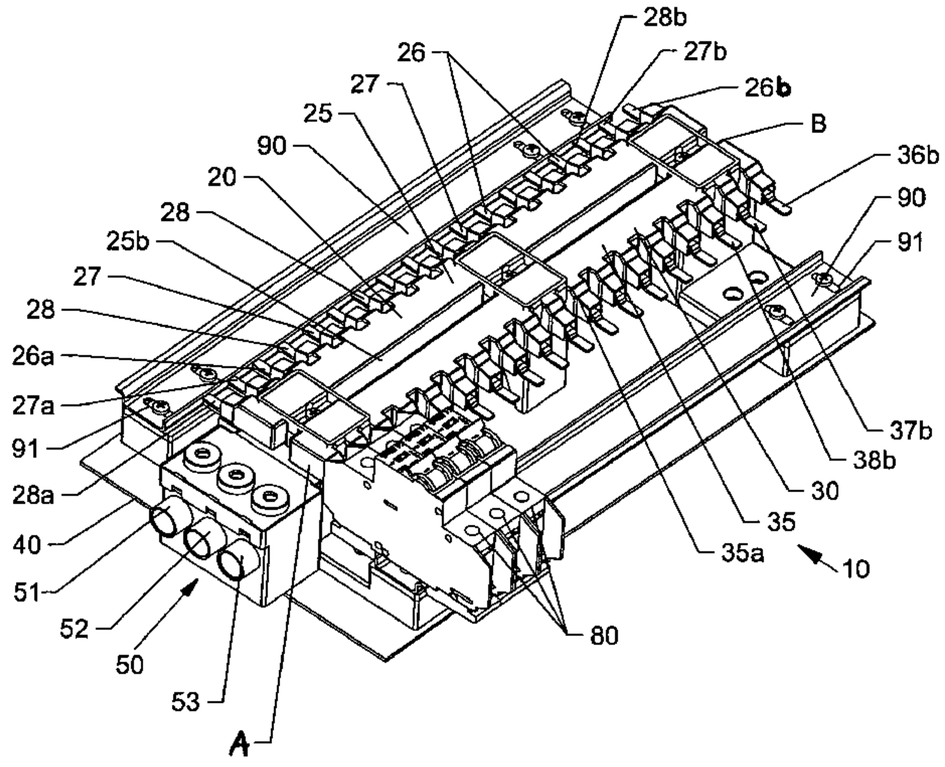
Primary Examiner—Jayprakash N Gandhi
Assistant Examiner—Robert J Hoffberg
(74) *Attorney, Agent, or Firm*—Mark A. Garzia, P.C.; Law Offices of Mark A. Garzia, P.C.

(57) **ABSTRACT**

The invention relates to a bus bar block with a first bus bar and a second bus bar, each of which has an insulating enclosure, which is at least partially open on one side across from the base side, with, in each enclosure, at least one terminal bar being arranged on which several terminal lugs are arranged such that they protrude from the enclosure in sections through the at least partially open side, with the two bus bars being arranged on a holding device such that their base areas are facing each other, with the holding device for each terminal bar of one of the two bus bars having an electro-conductive connection element, which is designed such that it can be connected with a first end section using one of the terminal lugs of a terminal bar of the first bus bar and with a second end section using one of the terminal lugs of a terminal bar of the second bus bar and such that it makes a connection to a connection contact.

31 Claims, 9 Drawing Sheets



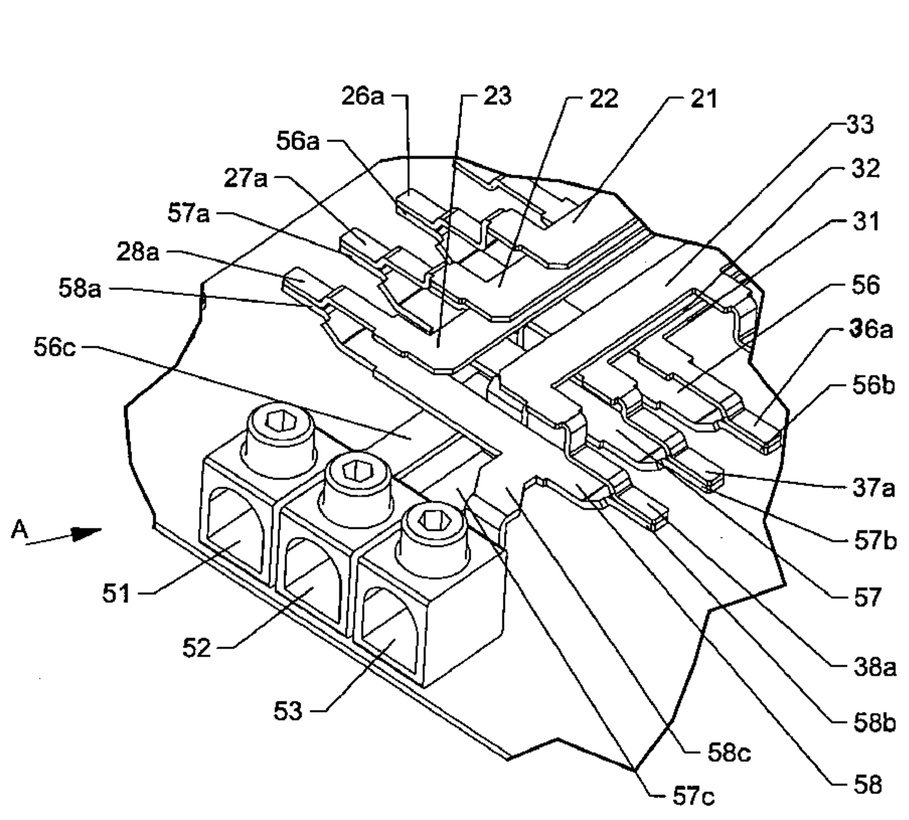
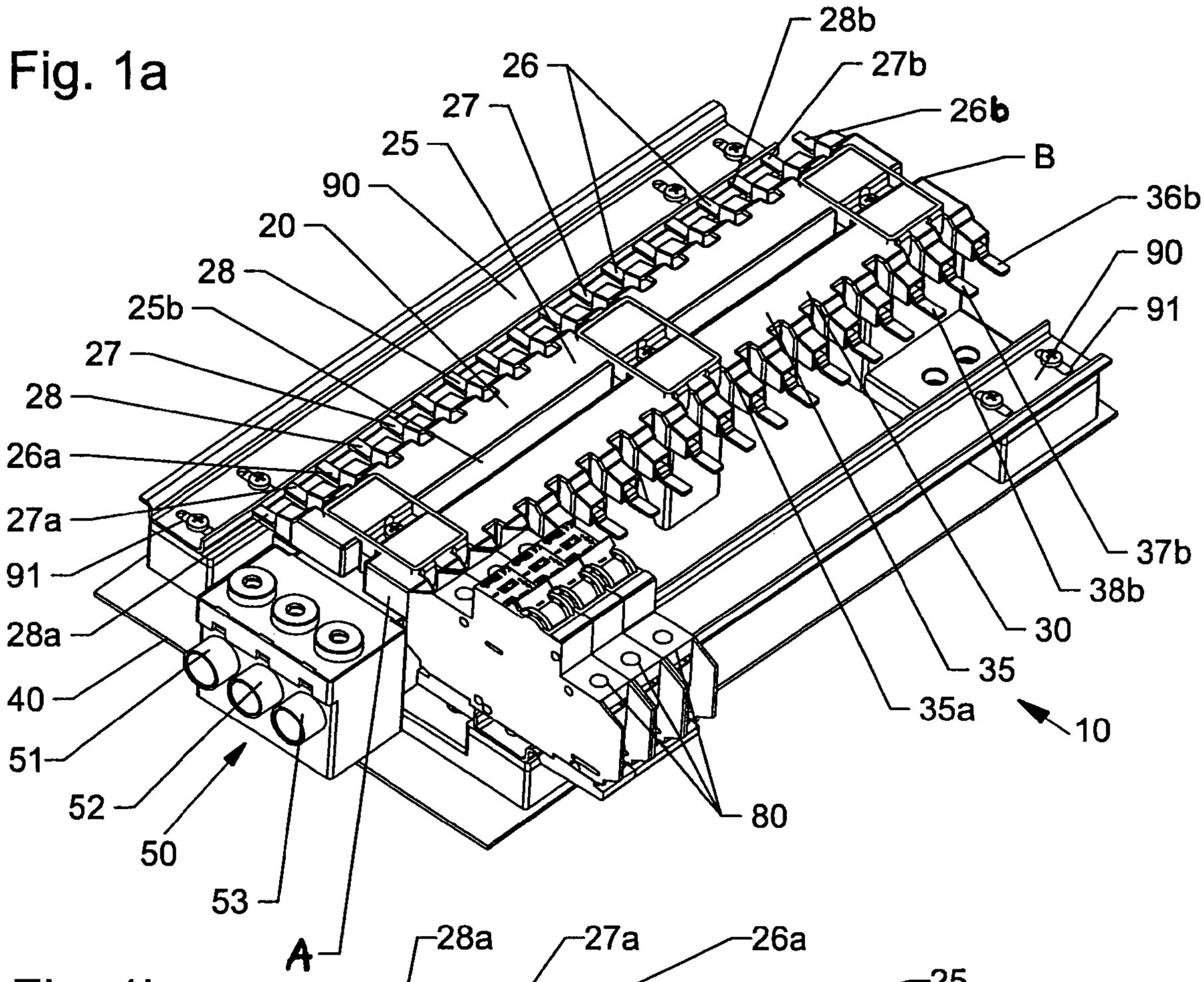


Fig. 1a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26a
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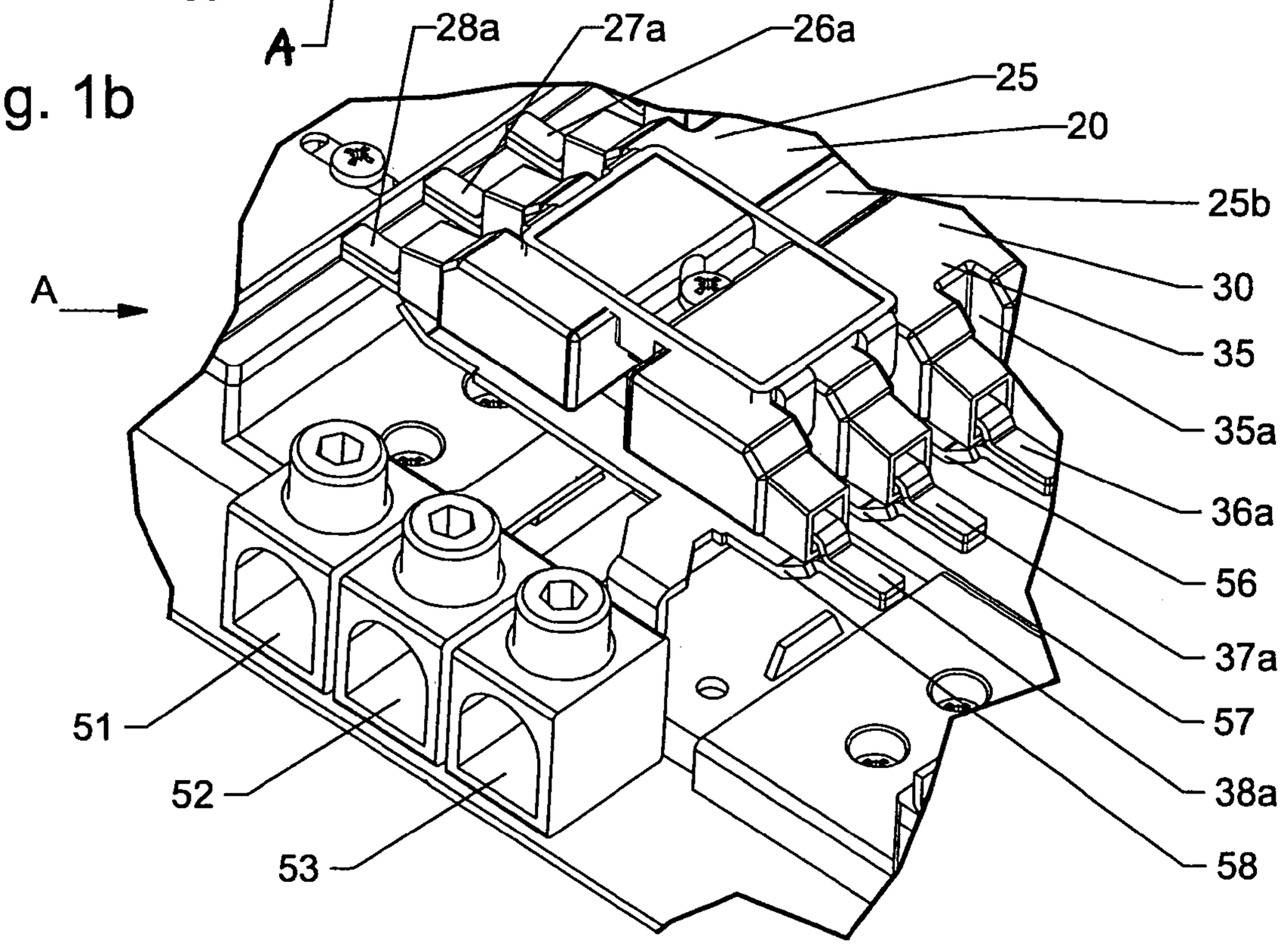
28a
40
51
52
50
53
A
35a
10
80
37b
38b
30
35

Fig. 1b


28a
27a
26a
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20
25b
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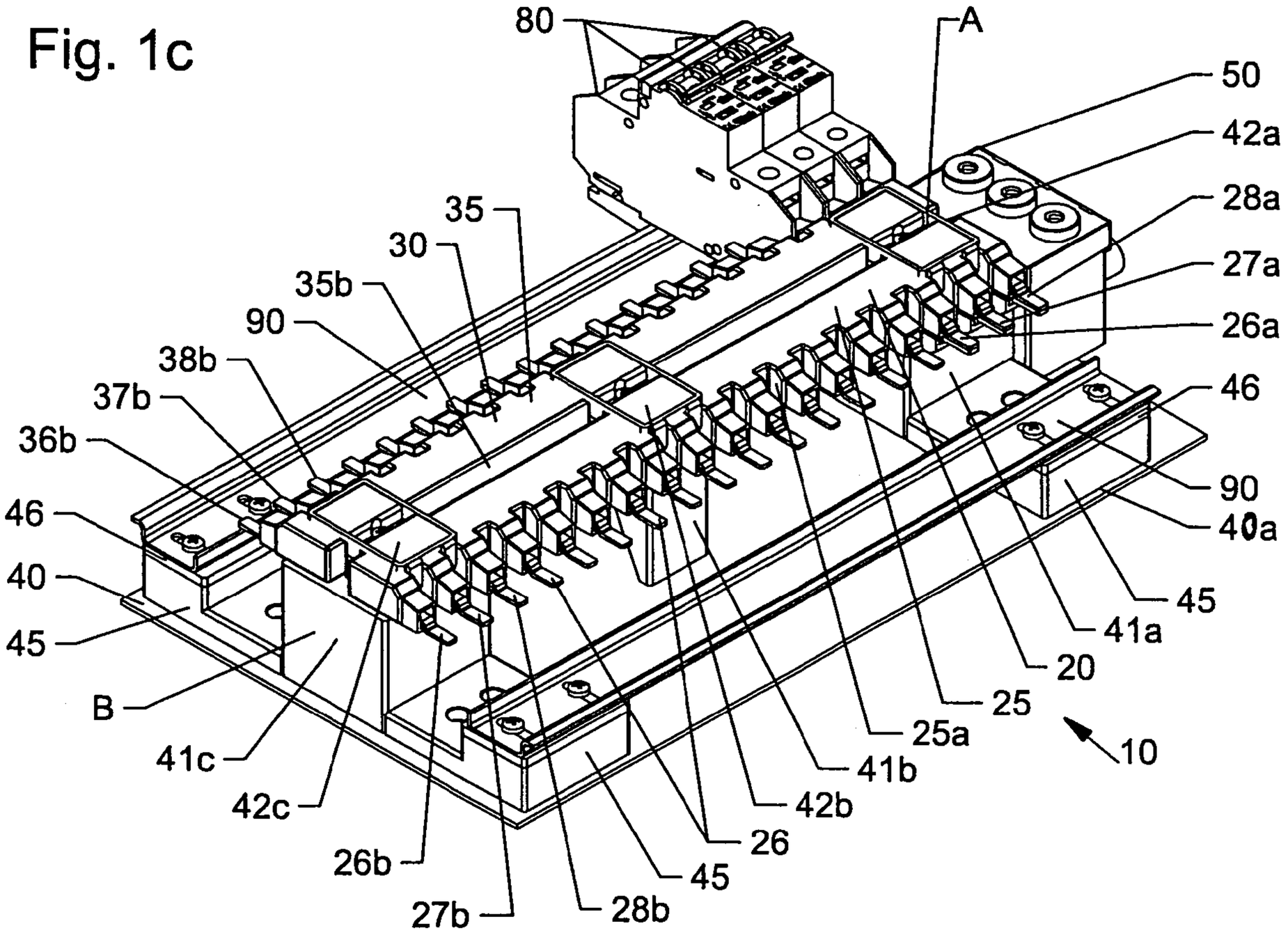
35
35a
36a
56
37a
57
38a
58
A
51
52
53

Fig. 1c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42a
28a
27a
26a
46
90
40a
45
41a
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25
25a
41b
42b
26
45
28b
27b
26b
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B
45
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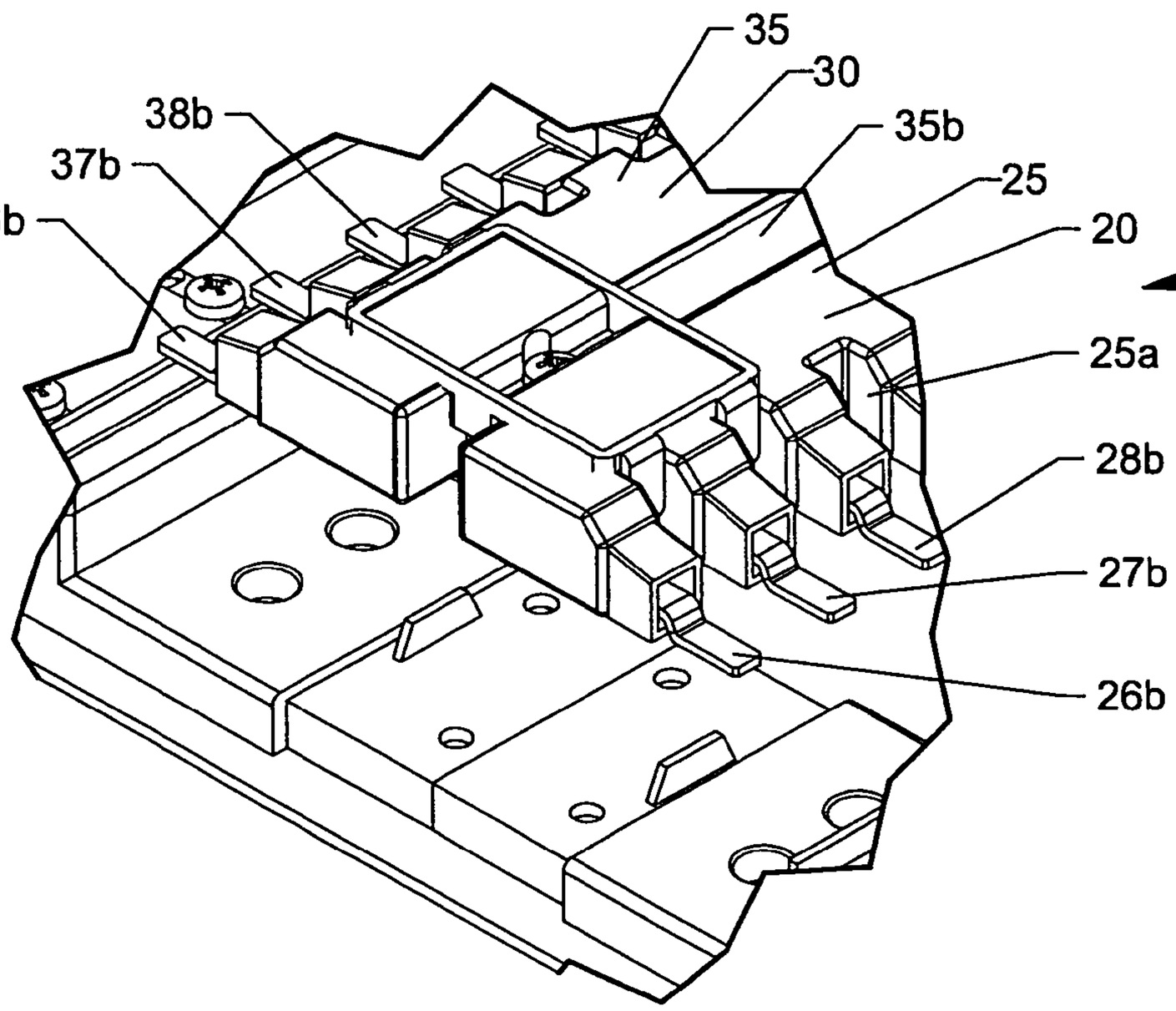
46
36b
37b
38b
90
35b
30
35
10

Fig. 1d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35b
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B
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28b
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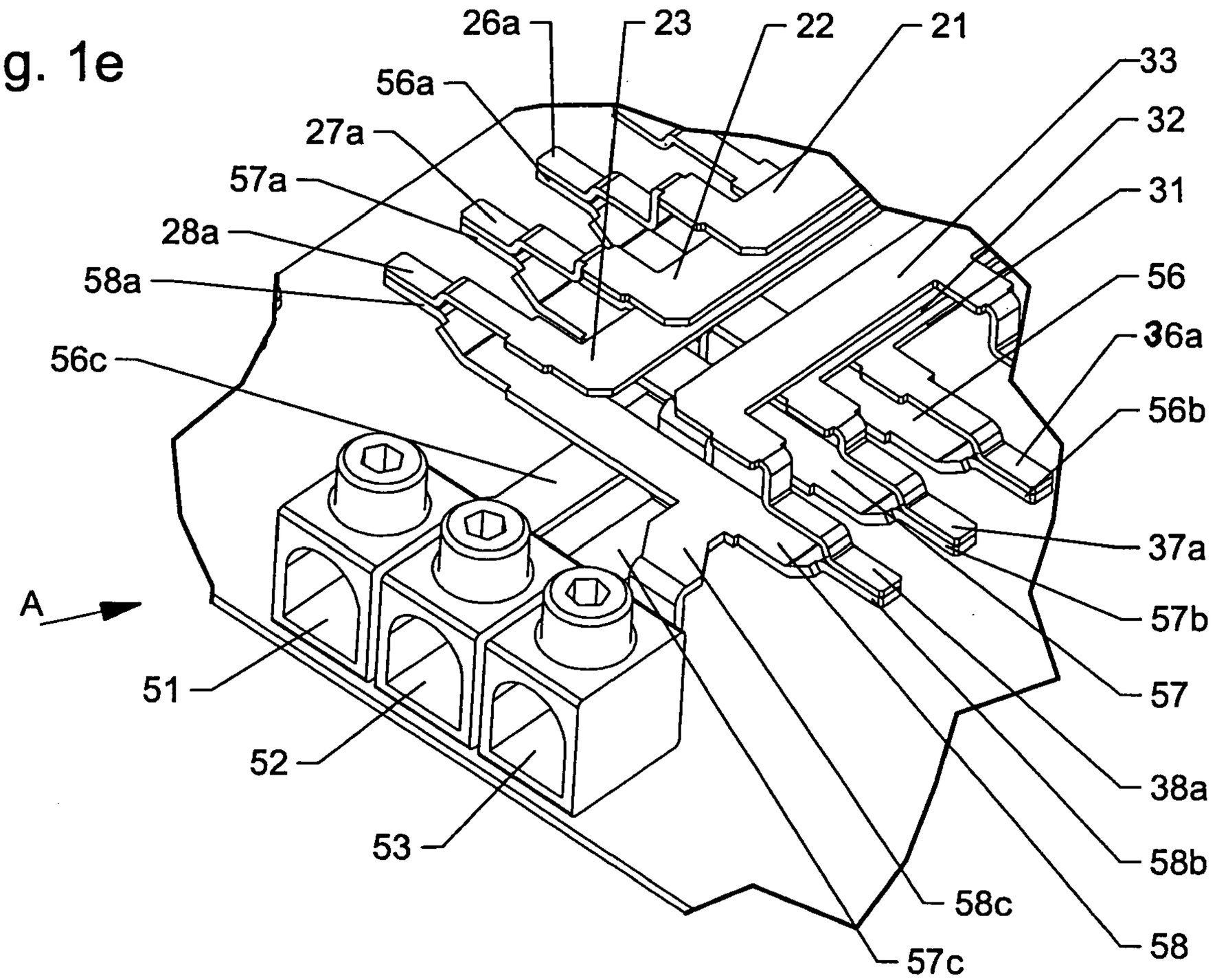
26b
38b
37b
36b

Fig. 1e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23
22
21
33
56a
32
27a
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28a
56
58a
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56c
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51
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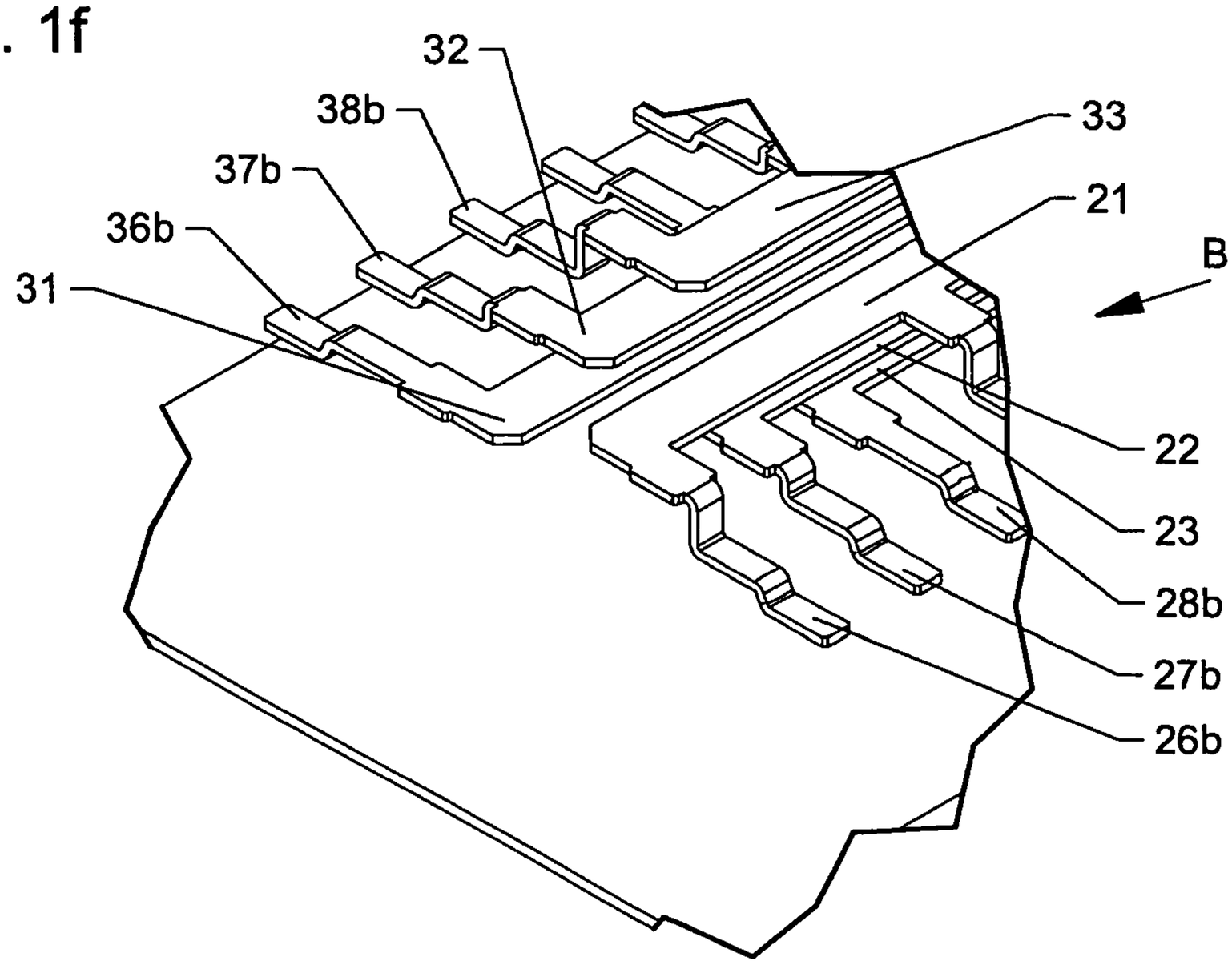
38a
58b
53
58c
58
57c

Fig. 1f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38b
33
37b
21
36b
B
31
22
23
28b
27b
26b

Fig. 2a

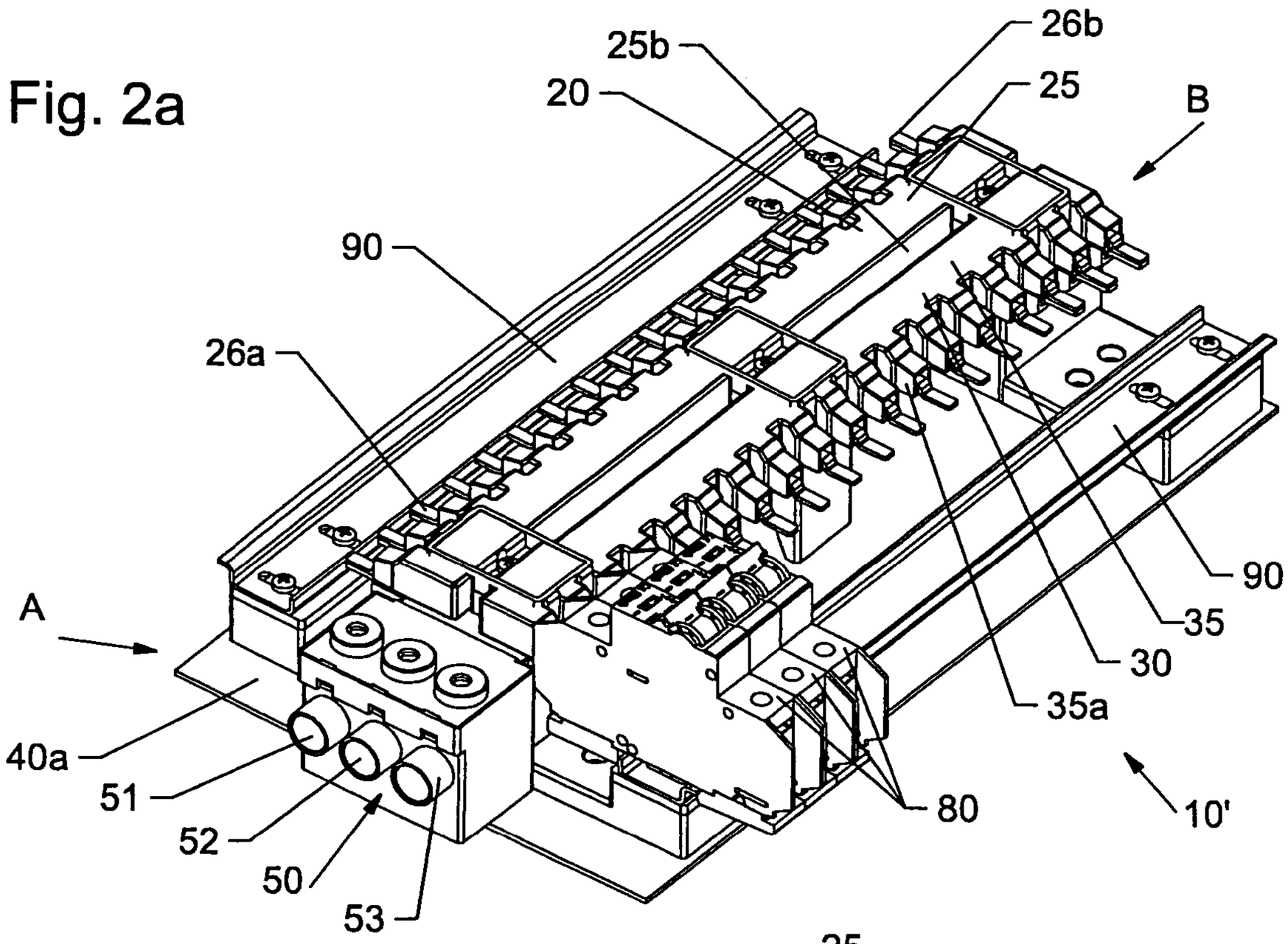
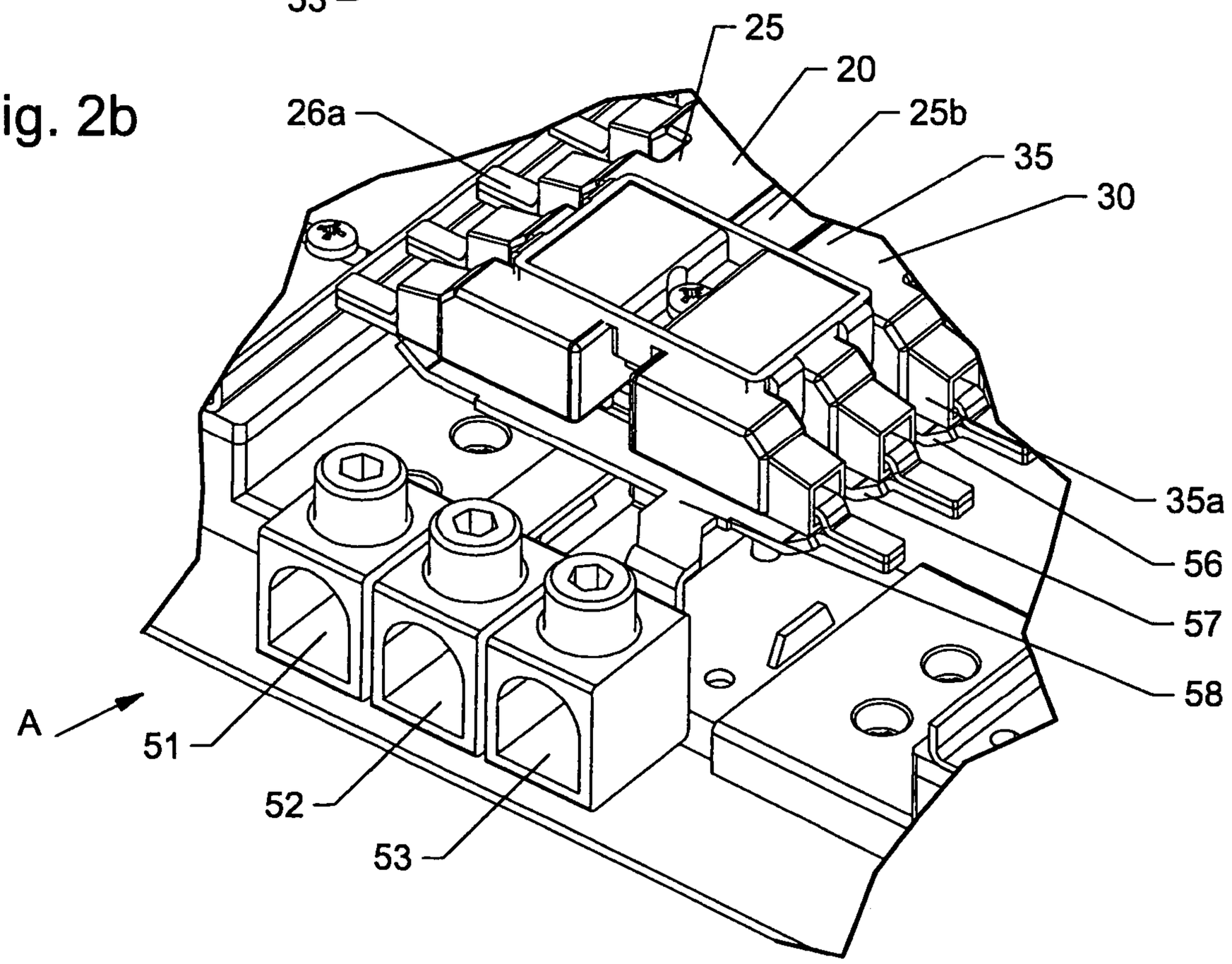

25b
26b
20
25
B
90
26a
35
30
35a
A
40a
51
52
50
53
80
10'

Fig. 2b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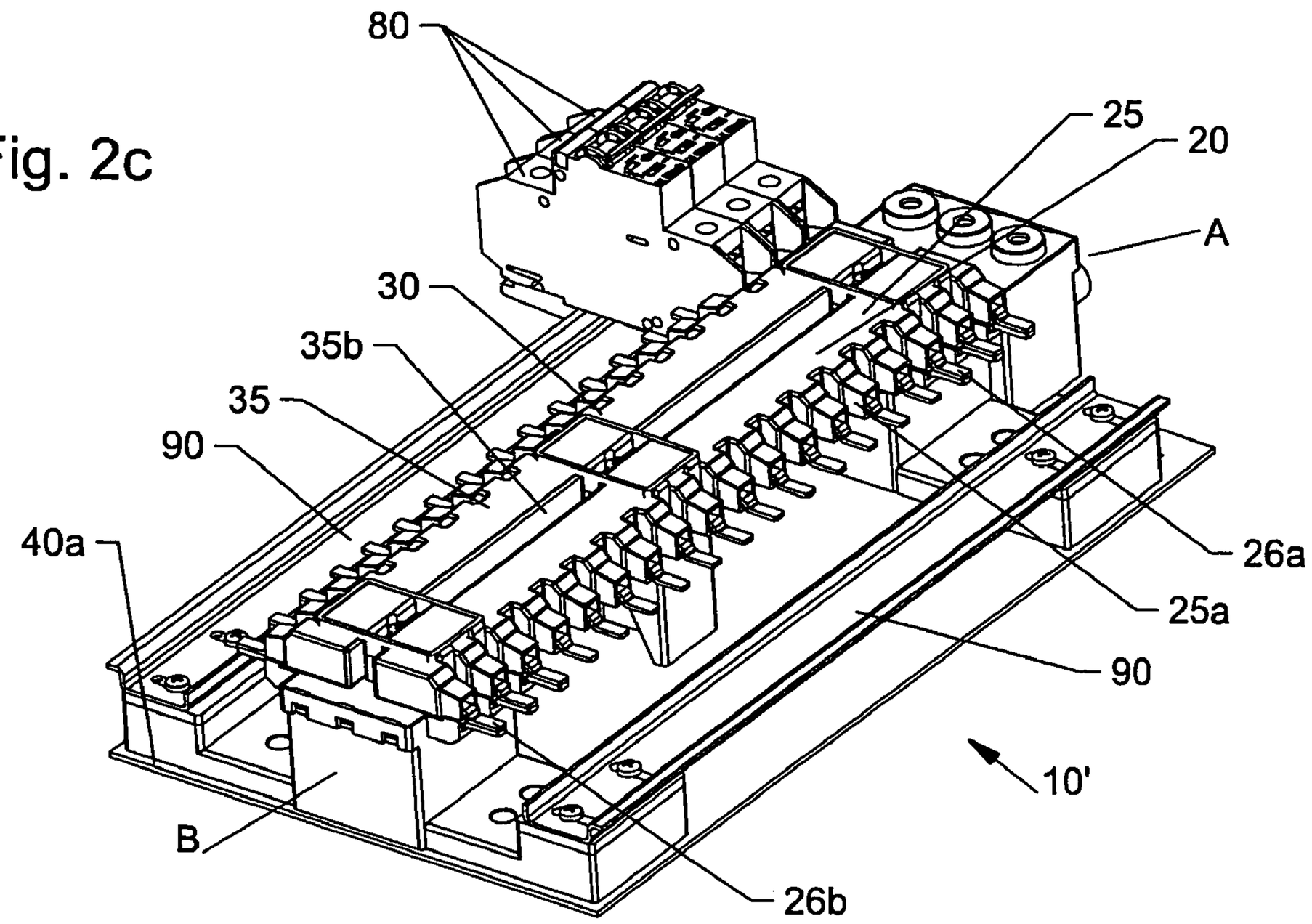
20
26a
25b
35
30
35a
56
57
58
A
51
52
53

Fig. 2c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25
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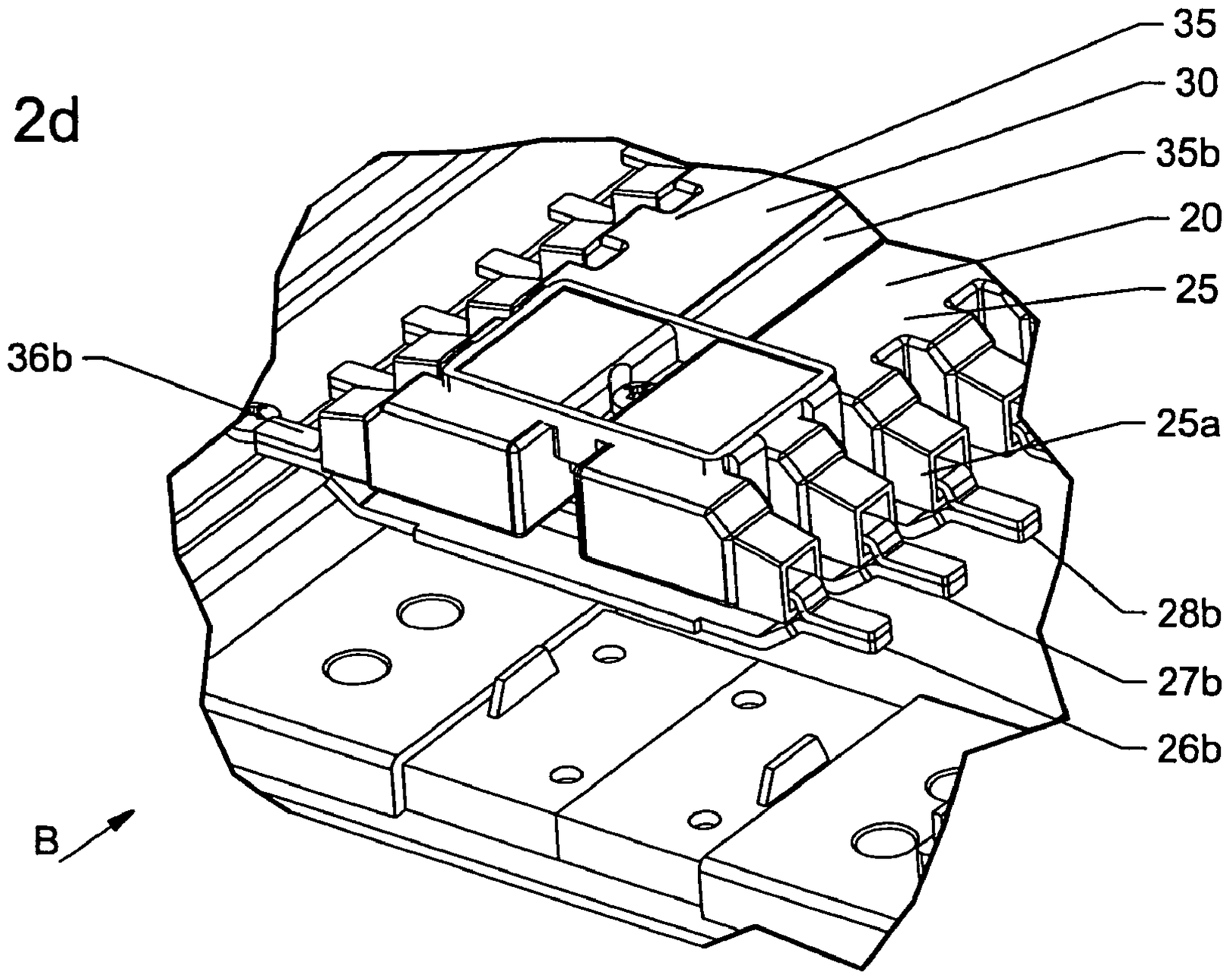
A
30
35b
35
90
40a
26a
25a
90
10'
B
26b

Fig. 2d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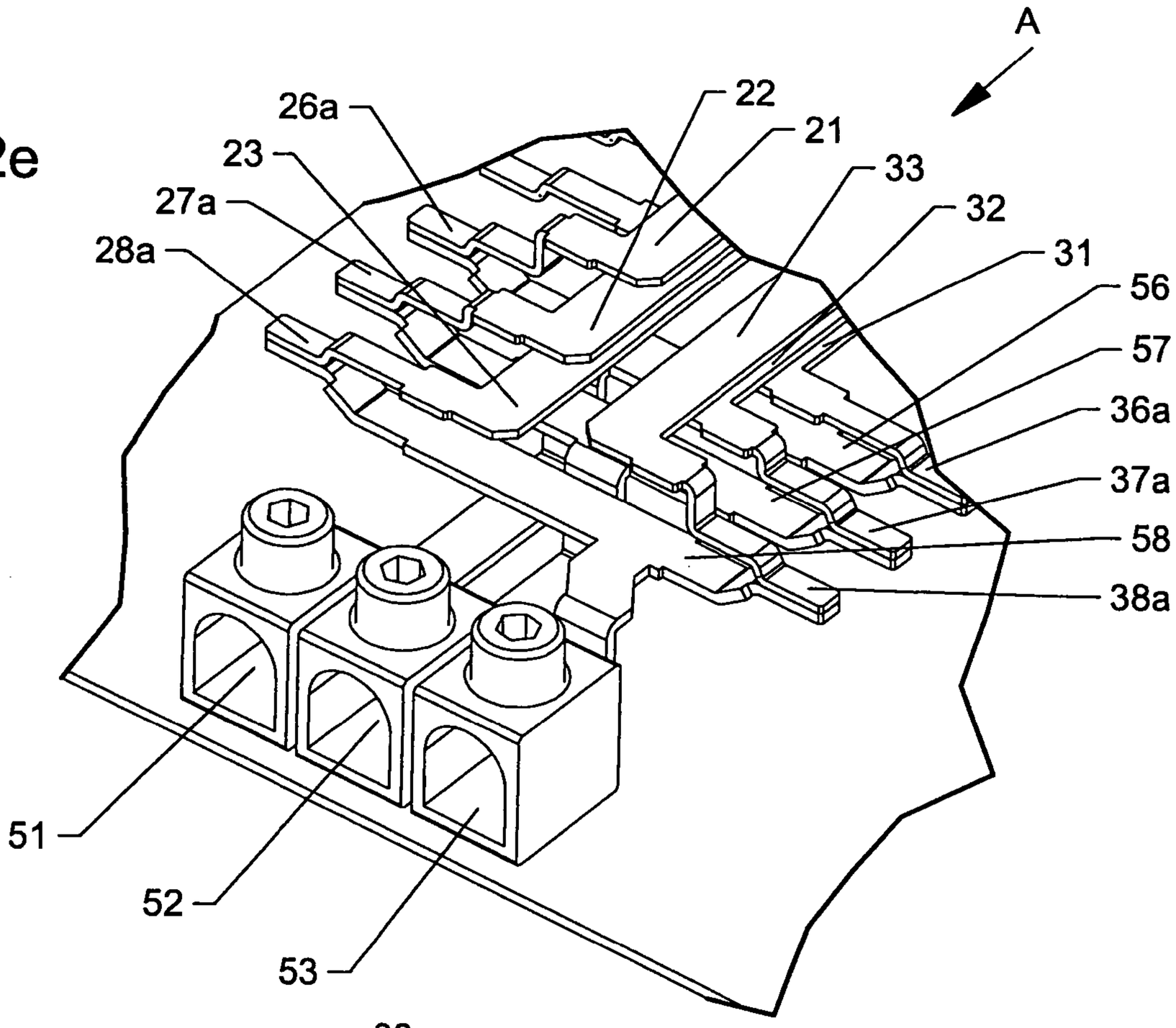
36b
25a
28b
27b
26b
B

Fig. 2e


A
26a
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28a
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57
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37a
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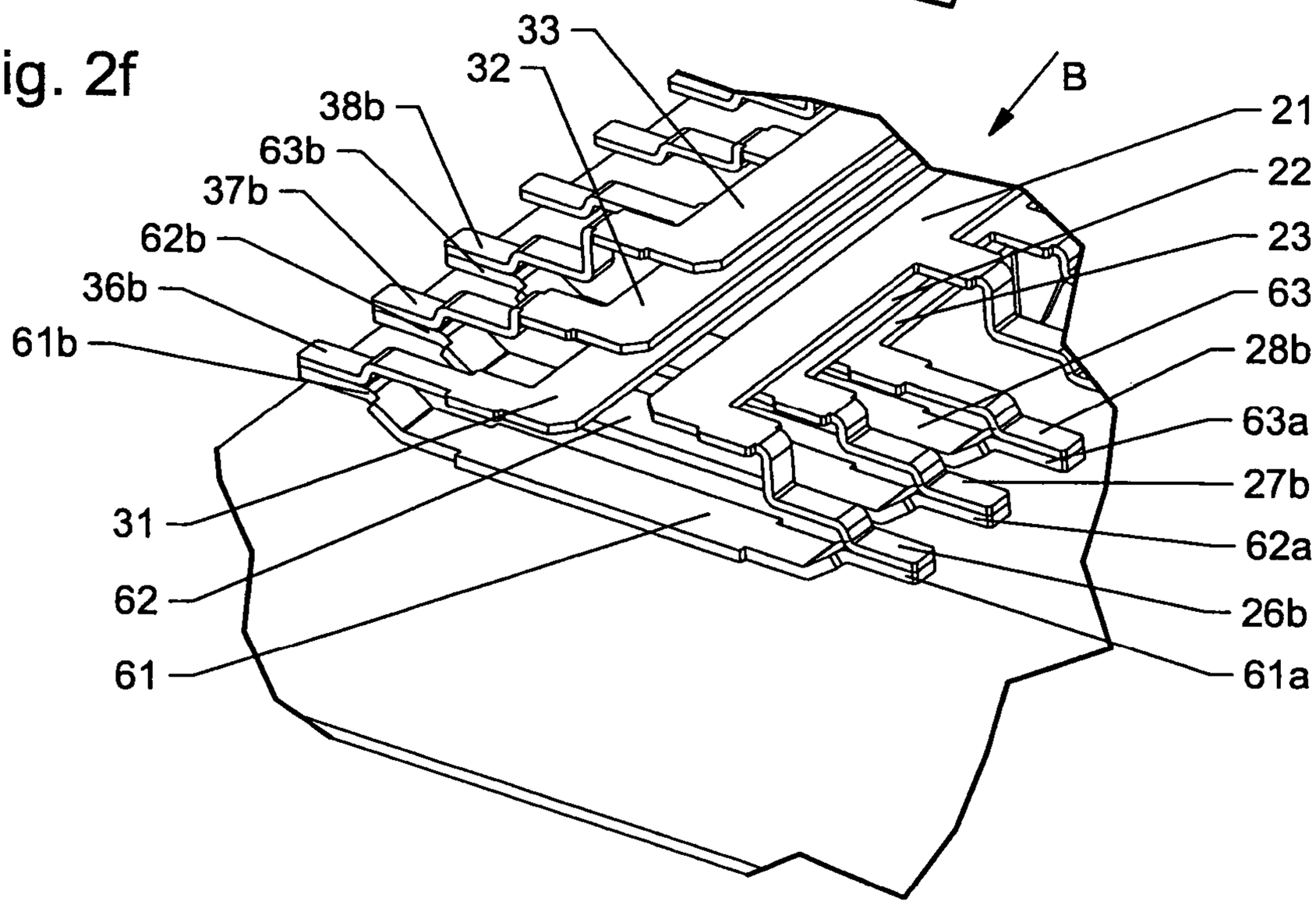
38a
51
52
53

Fig. 2f


33
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B
38b
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63b
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36b
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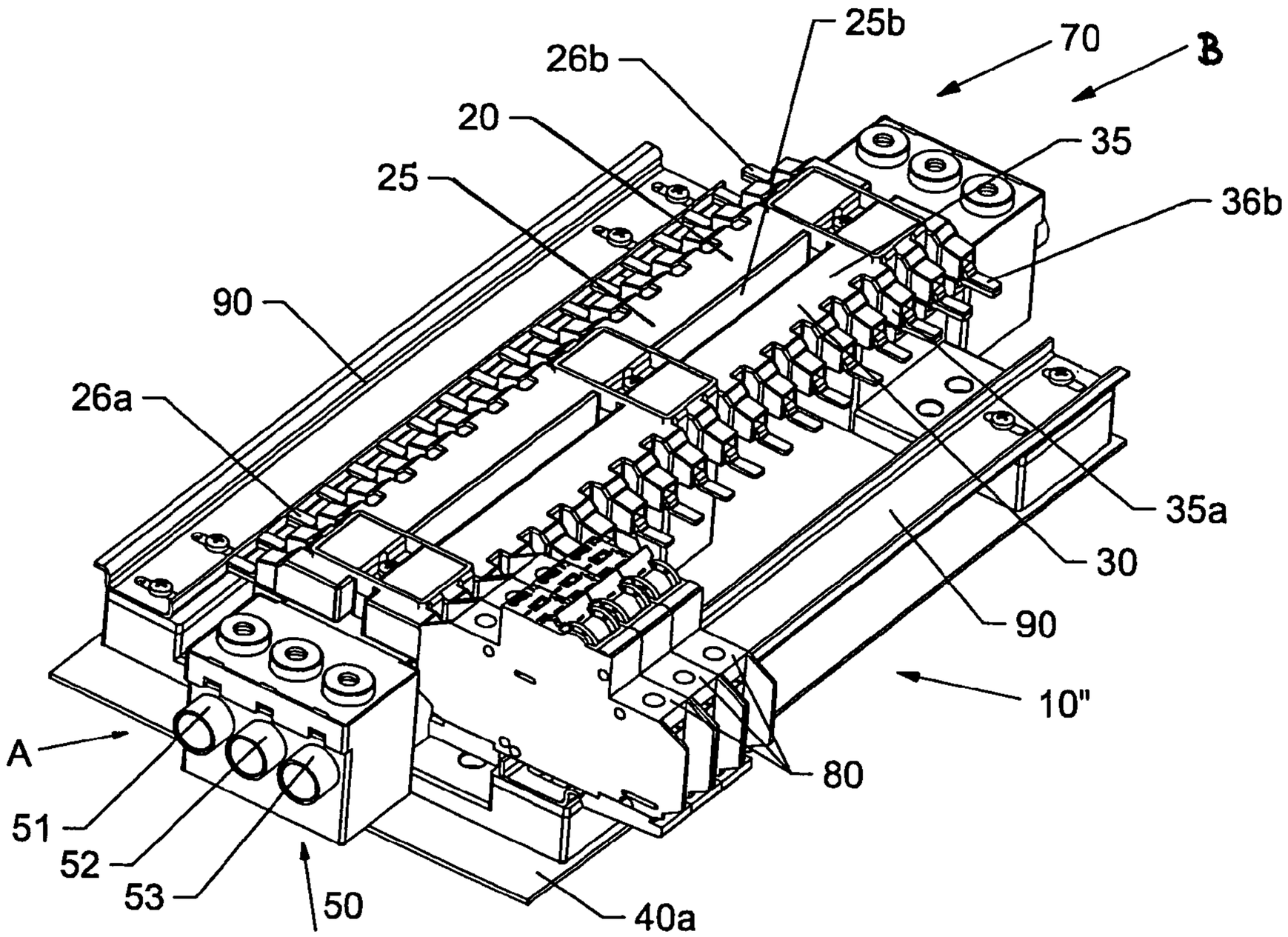
61b
63a
27b
31
62a
62
26b
61
61a

Fig.3a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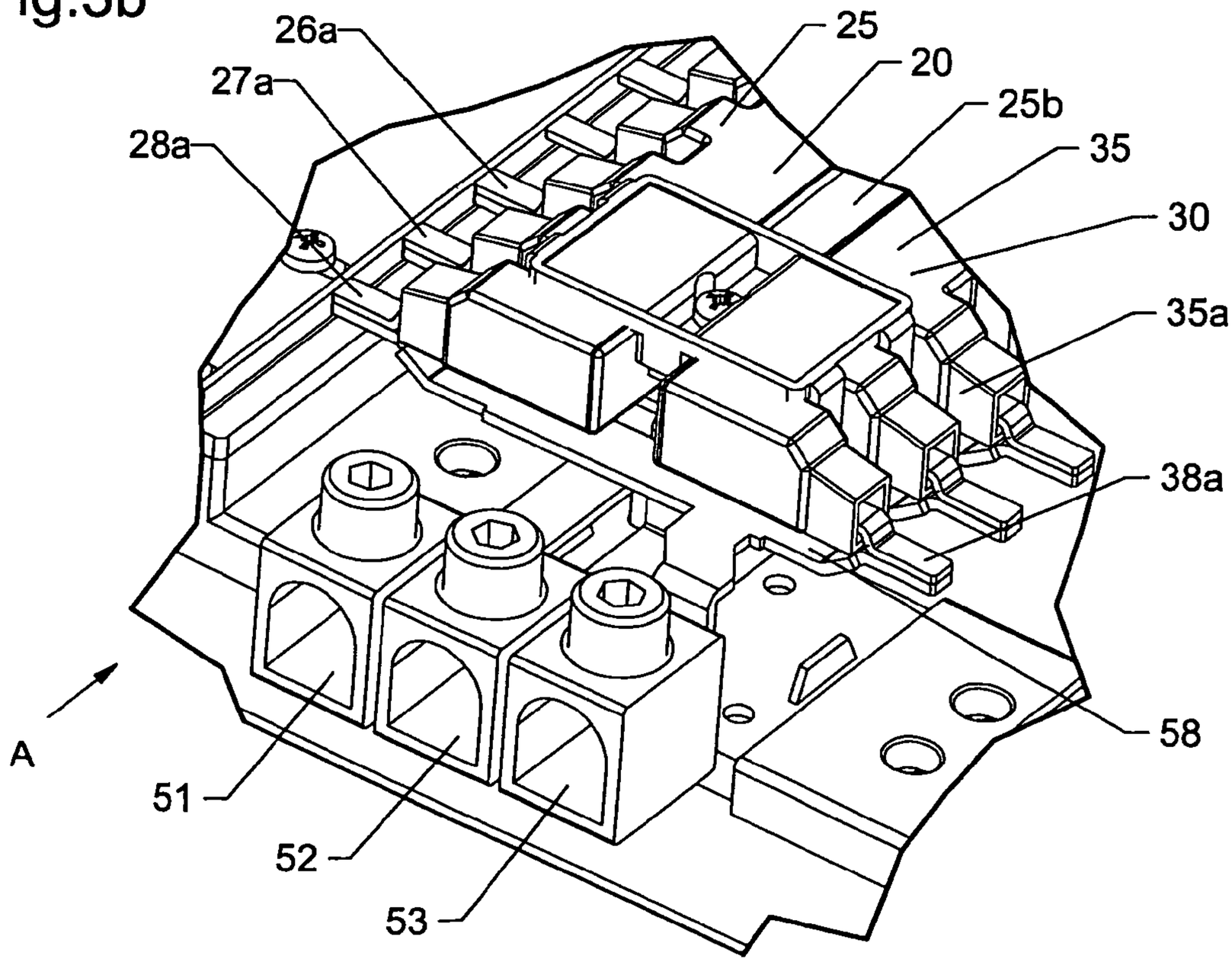
50
40a

Fig.3b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38a
A
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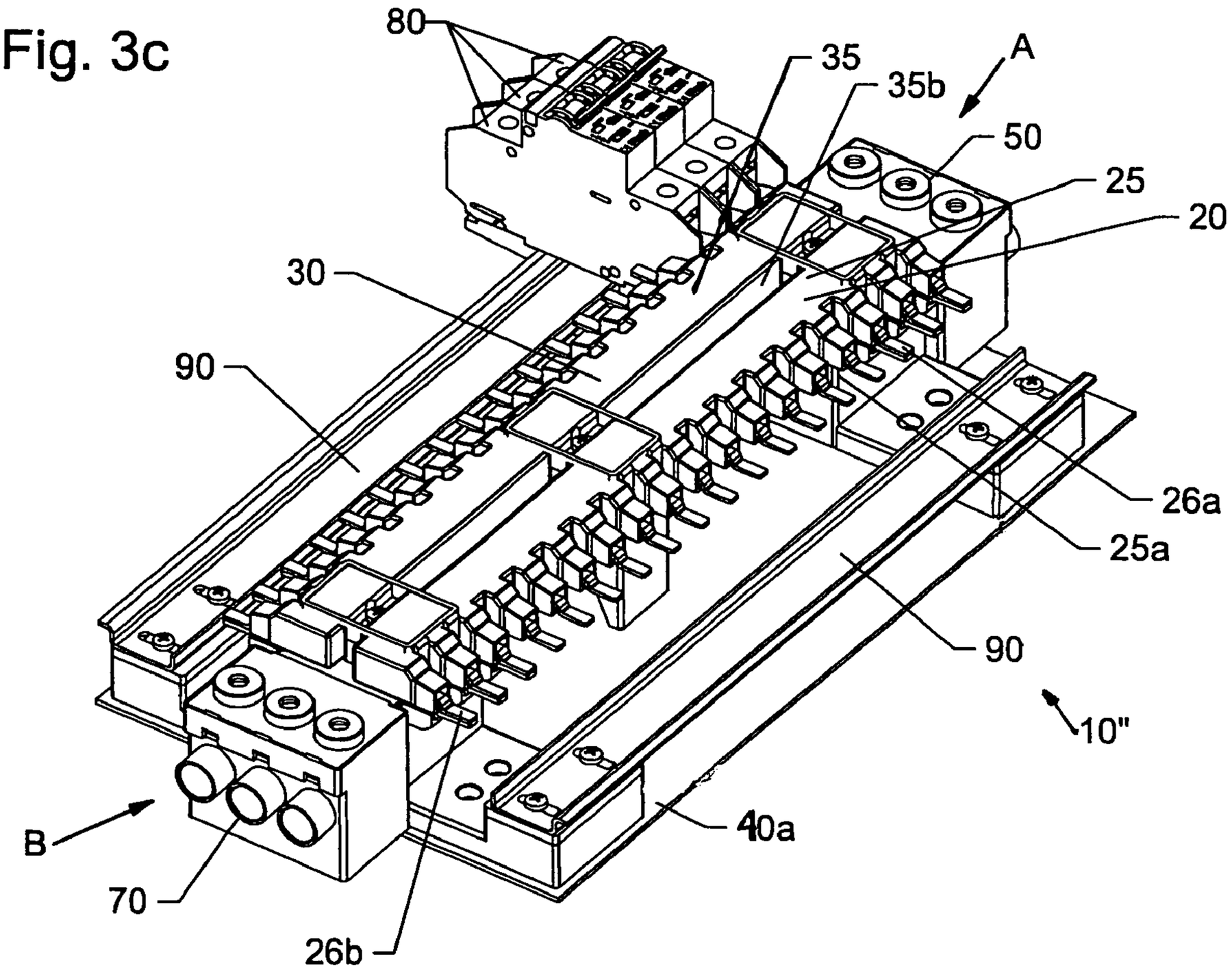
52
53

Fig. 3c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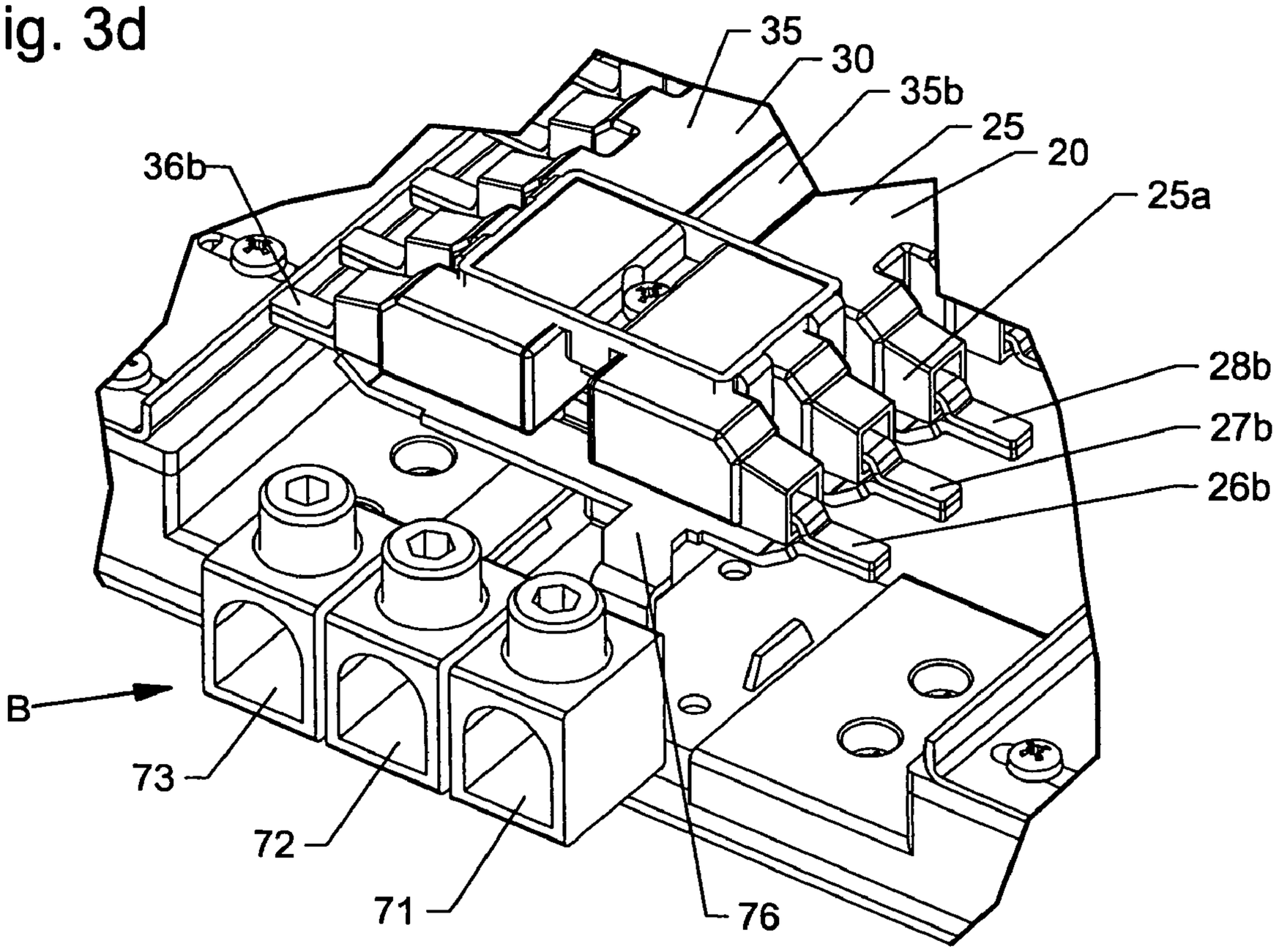
25a
90
10"
40a
B
70
26b

Fig. 3d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25a
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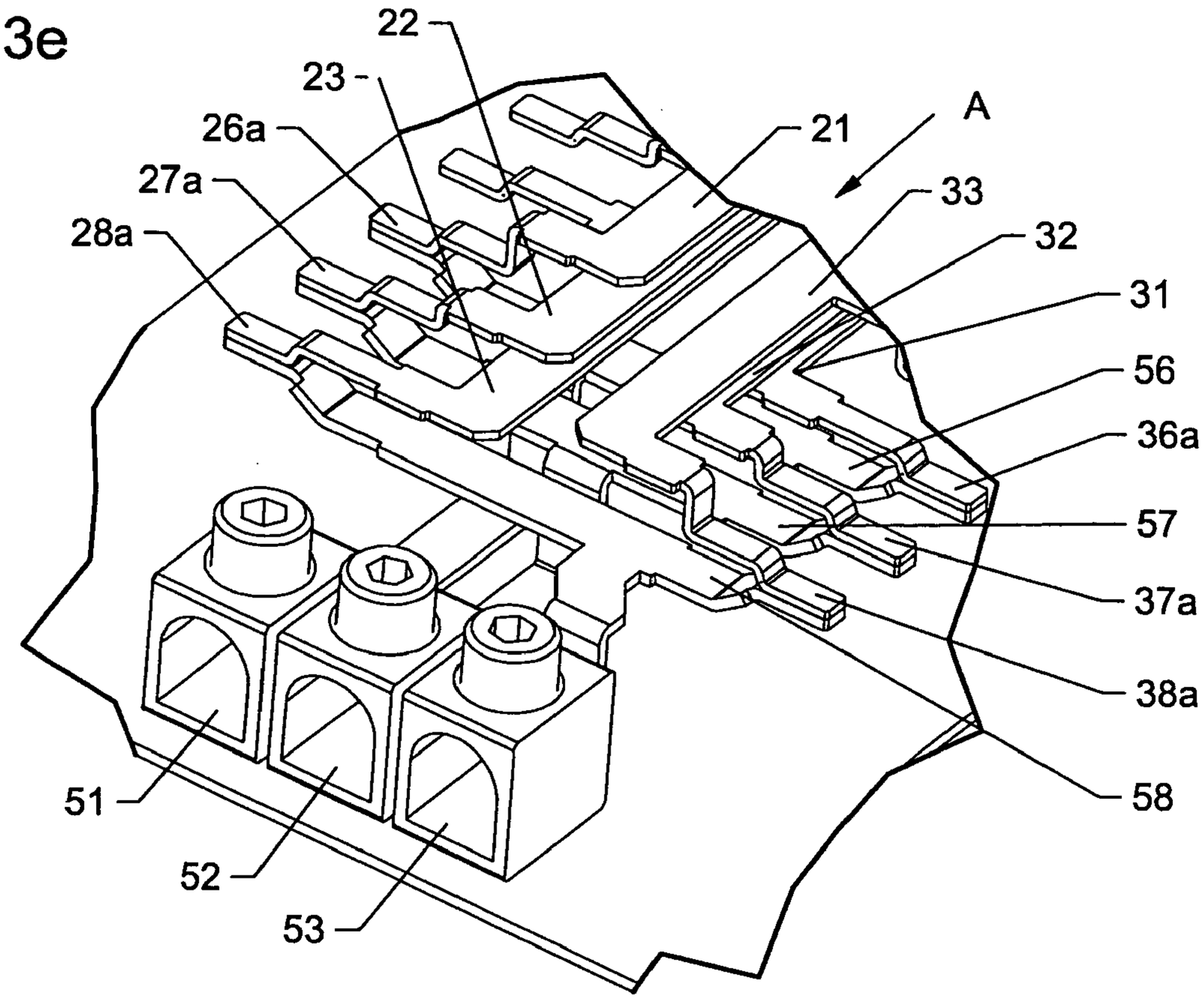
26b
B
73
72
71
76

Fig.3e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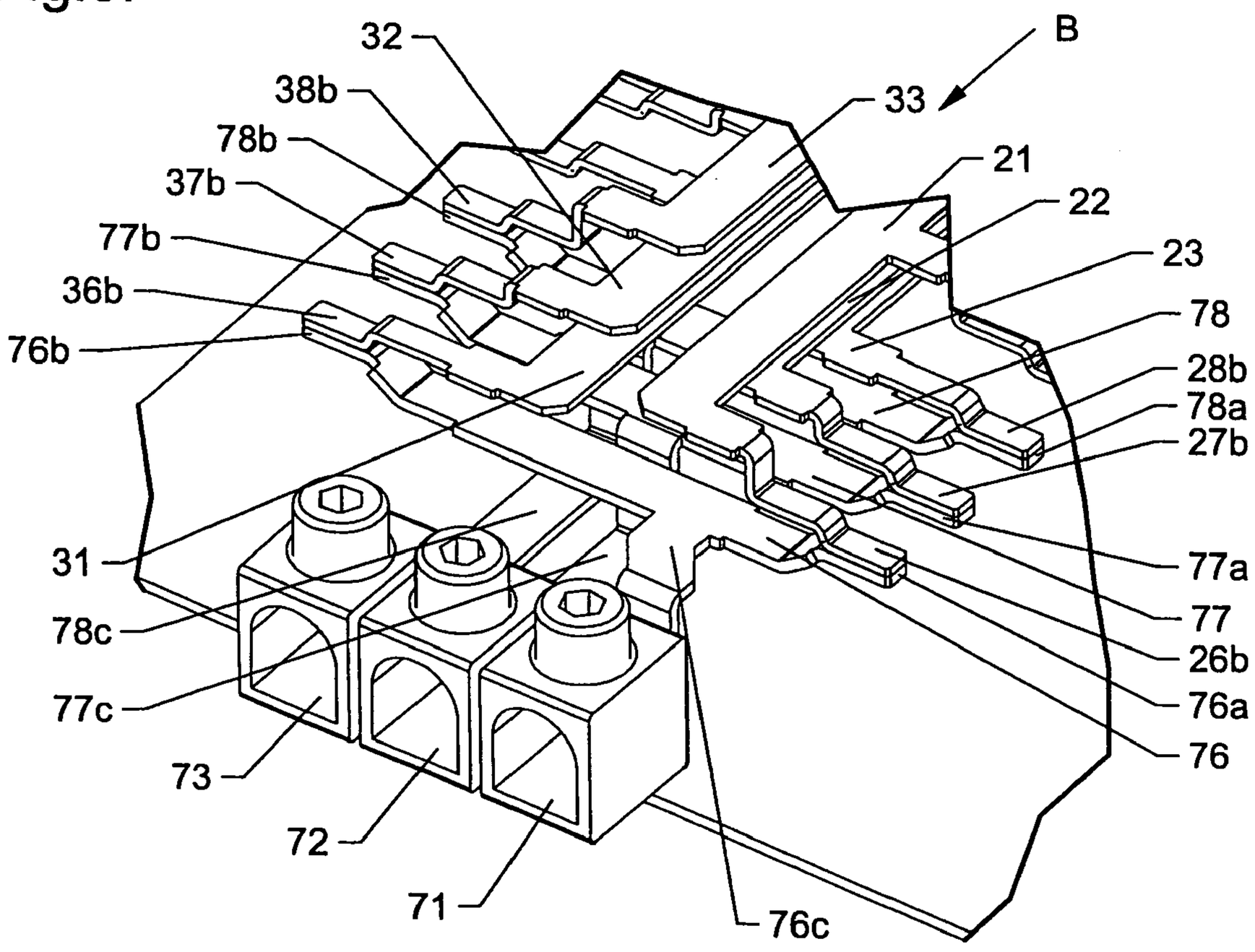
53

Fig.3f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78c
77c
73
72
71
77a
77
26b
76a
76
76c

BUS BAR BLOCK

CROSS-REFERENCE TO RELATED APPLICATIONS

This application claims priority to German Patent Application No. 10 2007 051 647.0 filed Oct. 26, 2007, titled BUS BAR BLOCK, applied for in the name of Friedrich Göhringer Elektrotechnik GmbH

BACKGROUND OF THE INVENTION

This invention relates to a bus bar block

Bus bars for the horizontal assembly are known, which have at least one terminal bar arranged on an insulating enclosure that is at least partially open on one side, on one side of which several terminal lugs are arranged that protrude from the partially opened side of the insulating enclosure. These bus bars are mounted such that the partially opened side faces upwards and connecting machines can be placed facing up on the bus bar.

Also known are bus bars that can be assembled vertically, which have at least one terminal bar arranged on an insulating enclosure, on which, diagonally to the terminal bar, terminal lugs are arranged that protrude from two sides with at least partial openings that are situated across from each other. The machines to be connected can thus be connected to the bus bar from both sides.

However, completely different bus bars are required, depending on which system is to be used. In particular, the system that has terminal lugs arranged on both sides of a vertical terminal bar for aligning machines is extremely inflexible.

SUMMARY OF THE INVENTION

The object of this invention is to provide a bus bar block that has great variability and is flexible to use.

The object of this invention is attained by a bus bar block with the features as claimed. Preferred embodiments and further designs of the invention may be found in the subclaims. According to the invention, the bus bar block is comprised of a first and a second bus bar, with each having one insulating enclosure, which is at least partially opened on one side across from a base side. In each enclosure at least one terminal bar is arranged on which several terminal lugs are arranged such that they protrude in sections from the enclosure through the at least the partially opened side. Such bus bars are generally known from the horizontal assembly. However, according to the invention, however, two such bus bars are arranged on a holding device such that their base areas face each other. The holding device for each terminal bar of one of the two bus bars is comprised of an electro-conductive connection element that is structured such that it can be connected with the terminal lug using a first end section of one of the terminal bars of the first bus bar and with the second end section using the terminal lug of a terminal bar of the second bus bar and thus make a connection to a connecting contact. By means of this holding device it is possible to arrange the known bus bars that have terminal lugs on only one side, such that overall an arrangement is created, in which terminal lugs protrude on two opposite sides, so that a bus bar block for a horizontal assembly with terminal lugs arranged on one side, as well as a bus bar block for the vertical assembly with two terminal lugs arranged on opposite sides may be assembled with one and the same type of bus bar block, according to the building block principle.

Preferably, the connecting contact or the connecting contacts are arranged in the holding device. This allows the bus bar block to be assembled as compactly as possible.

In addition, it is preferable for both bus bars to be assembled identically, which further reduces the necessary number of components.

It is especially advantageous for each of the bus bars to have two, three or four terminal bars, which are arranged in the insulating enclosure, insulated from each other in separate chambers, so that these bus bars can provide the number of different phases needed in one bus bar block.

In accordance with a preferred embodiment of the invention, the connection elements are designed such that their end sections lie flat against the respective terminal lugs when bus bars are mounted on a holding device, in order to generate a contact with as large a surface area as possible and, in particular, good electro-conductive contact.

Preferably, the holding device is designed such that the connection elements can be connected with the terminal lugs of the bus bars, which are arranged in one of the first of the end sections of the bus bar, so that the feed-in at one end of the bus bar block can be arranged where it is easily accessible.

In an advantageous further development of the invention, the holding device has a joining element for each terminal bar of one of the bus bars, which can be connected with a first end section using one of the terminal lugs of one of the terminal bars of the first bus bar and with a second end section using one of the terminal lugs of one of the terminal bars of the second bus bar, which causes the respectively connected terminal bars of the two bus bars to be connected in parallel in the region between the connection elements and the joining elements. This allows more power to feed into the bus bar block.

It is also preferable that the joining elements can be connected using the terminal lugs of the bus bars, which are arranged in a second of the end sections of the bus bars, so that the terminal bars can be connected in parallel over their entire length.

In accordance with a preferred design of the invention, the joining elements are structured as connection elements. Preferably, the holding device thus has two electro-conductive connection elements for each terminal bar of one of the two bus bars, with the two connection elements able to be connected using the terminal lugs of the bus bars which are arranged in the end sections of the bus bars, allowing several bus bar blocks to be connected in series.

In a preferred design of the invention, the holding device has two top-hat rails that are arranged relative to the bus bars in a way that allows mounting connectable devices to the terminal lugs.

In particular, the top-hat rails thereby run essentially parallel to the bus bars.

However, to accommodate the different sizes of the devices, it is especially preferred that each top-hat rail can be variably mounted on a fastening device relative to the bus bars. In particular, every top-hat rail preferably has slot holes for adjusting the distance between the bus bar and the top-hat rail. Furthermore, between each of the top-hat rails and the fastening device there should be at least one, preferably several intermediate elements to adjust the relative height. This allows an especially flexible construction of the bus bar block that can be adjusted easily to the appropriate machine size.

BRIEF DESCRIPTION OF THE DRAWINGS

The invention is explained in detail by means of the following figures. They show

FIG. **1***a* a perspective view, diagonally from the front, of a first embodiment example of the bus bar block according to the invention.

FIG. **1***b* an enlargement of a section from FIG. **1***a*.

FIG. **1***c* another perspective view from diagonally behind the embodiment example in accordance with FIG. **1***a*.

FIG. **1***d* an enlargement of a section from FIG. **1***c*.

FIG. **1***e* a perspective illustration of the electroconducive connections in a first end section of the bus bar block in accordance with FIG. **1***a*.

FIG. **1***f* a perspective illustration of the electrical connecting leads in a second end section of the bus bar block in accordance with FIG. **1***a*.

FIG. **2***a* a perspective view, diagonally from the front, of a second embodiment example of a bus bar block in accordance with the invention.

FIG. **2***b* an enlargement of a section from FIG. **2***a*.

FIG. **2***c* another perspective view from diagonally behind the embodiment example in accordance with FIG. **2***a*.

FIG. **2***d* an enlargement of a section from FIG. **2***c*.

FIG. **2***e* a perspective illustration of the electroconducive connections in a first end section of the bus bar block in accordance with FIG. **2***a*.

FIG. **2***f* a perspective illustration of the electrical connecting leads in a second end section of the bus bar block in accordance with FIG. **2***a*.

FIG. **3***a* a perspective view, diagonally from the front, of a third embodiment example of a bus bar block according to the invention.

FIG. **3***b* an enlargement of a section from FIG. **3***a*.

FIG. **3***c* another perspective view from diagonally behind the embodiment example in accordance with FIG. **3***a*.

FIG. **3***d* an enlargement of a section from FIG. **3***c*.

FIG. **3***e* a perspective view of the electroconducive connections in a first end section of the bus bar block in accordance with FIG. **3***a*.

FIG. **3***f* a perspective illustration of the electrical connecting leads in a second end section of the bus bar block in accordance with FIG. **3***a*.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

FIGS. **1***a* to **1***f* show different views of the first embodiment example of a bus bar block **10**. The same parts are designated with the same reference number. For clarity, not all reference numbers are noted on all figures.

The bus bar block **10** has a first bus bar **20** and a second bus bar **30**, which, are essentially designed identical to each other. The bus bars **20**, **30** have an insulating enclosure **25**, **35**, each of which has a base side **25***b*, **35***b* and a base side **25***a*, **35***a* located across from the base side **25***b*, **35***b*, which at least partially has openings. Each of the bus bars **20**, **30** has a first terminal bar **21**, **31**, a second terminal bar **22**, **32** and a third terminal bar **23**, **33**, which are arranged parallel to each other in the enclosure **25**, **35** and are insulated from each other in the enclosure **25**, **35**, for example by being arranged in separate chambers of the enclosure **25**, **35**. Terminal lugs **26**, **27**, **28**, **36**, **37**, **38** are arranged on each terminal bar **21**, **22**, **23**, **31**, **32**, **33** that are spaced lengthwise from each other and that run orthogonally to the respective terminal bar **21**, **22**, **23**, **31**, **32**, **33** and protrude with their free end from the openings in the sides **25***a*, **35***a* of the enclosure **25**, **35**.

The terminal bars **21**, **22**, **23** or **31**, **32**, **33** of the bus bars **20**, **30** are arranged parallel to each other, such that the terminal lugs **26**, **27**, **28**, **36**, **37**, **38** of the terminal bars **21**, **22**, **23**, **31**, **32**, **33** are each offset differently from each other, so that all terminal lugs **26**, **27**, **28** of the terminal bars **21**, **22**, **23** of the first bus bar **20** or all terminal lugs **36**, **37**, **38** of the terminal bars **31**, **32**, **33** of the second bus bar **30** lie in a plane. The terminal lugs **26**, **27**, **28** or **36**, **37**, **38** of the terminal bars **21**, **22**, **23** or **31**, **32**, **33** of the first bus bar **20** or the second bus bar **30** are each arranged at the same distance apart; however, they are offset from each other such that for the terminal lugs **26**, **27**, **28** or **36**, **37**, **38** that lie in a plane, every third terminal lug belongs to the same terminal bar.

The two bus bars **20**, **30** are mounted to each other by means of a holding device **40** such that their base sides **25***b*, **35***b* are facing each other. The holding device **40** has a base plate **40***a*, on which three supports **41***a*, **41***b*, **41***c* are arranged, on which the two bus bars **20**, **30** can be held in place with help from the brackets **42***a*, **42***b*, **42***c* so that the clamps **42***a*, **42***b*, **42***c* can be bolted to the supports **41***a*, **41***b*, **41***c* using screws and the bus bars **20**, **30** can be fixed between the clamps **42***a*, **42***b*, **42***c* and the supports **41***a*, **41***b*, **41***c*. This achieves an arrangement in which terminal lugs are arranged lengthwise on two sides, with help from two practically identical bus bars **20**, **30**, each of which each has terminal lugs **26**, **27**, **28**, **36**, **37**, **38** only on one side **25***a*, **35***a*. Thus, it is no longer necessary to use different parts for the bus bars **20**, **30** usually mounted horizontally for one system and the bus bars usually mounted horizontally with two protruding terminal lugs, since the second system can be assembled from two identical bus bars **20**, **30** by means of a holding device **40**.

Parallel to the bus bars **20**, **30** and usually offset in height, two top-hat rails **90** are arranged on the side of the bus bars **20**, **30** on fastening devices **45**, which are primarily designed as a support block to which the top-hat rails **90** can be bolted. Machines **80** can be attached to the top-hat rails **90** such that they make contact with the terminal lugs **26**, **27**, **28**, **36**, **37**, **38** of the bus bars **20**, **30**. In order to accommodate the different machine sizes **80**, the position of the top-hat rails **90** can be varied relative to the bus bars **20**, **30**. For this purpose the top-hat rails **90** have slot holes **91**, which stretch orthogonal to the longitudinal direction of the top-hat rails **90** and which are used to vary the distance between the longitudinal direction of the top-hat rail **90** and the longitudinal direction of the bus bars **20**, **30**. Additionally, intermediate elements **46** of different heights may be inserted between the fastening devices **45**, designed as support blocks, and the top-hat rails **90**, in order to vary the distance between the top-hat rail **90** and the fastening devices **45** or the base plate **40***a*, which also varies the relative height between the top-hat rail **90** and the bus bars **20**, **30**. The bus bar block **10** may have variable design, depending on which machines **80** should be connected to the bus bar block **10**.

The bus bar block **10** has a first end section A and a second end section B, in which each of the ends of the bus bars **20**, **30** are located.

The outer terminal lugs of the terminal bars **21**, **22**, **23**, **31**, **32**, **33** of the bus bars **20**, **30** are located in the end regions A, B. The terminal lugs located in the first end section are designated as follows: the terminal lugs of the first terminal bar **21** of the first bus bar **20** are designated with **26***a*, the terminal lugs of the second terminal bar **22** of the first bus bar **20** are designated with **27***a*, the terminal lugs of the third terminal bar **23** of the first bus bar **20** are designated with **28***a*, the terminal lugs of the first terminal bar **31** of the second bus bar **30** are designated with **36***a*, the terminal lugs of the second terminal bar **32** of the second bus bar **30** are designated with **37***a*, and the terminal lugs of the third terminal bar **33** of the second bus bar **30** are designated with **38***a*.

Similarly, the last terminal lugs located in the second end section B of the first terminal bar **21** of the first bus bar **20** are

designated with **26***b*, the terminal lugs of the second terminal bar **22** of the first bus bar **20** are designated with **27***b*, the terminal lugs of the third terminal bar **23** of the first bus bar **20** are designated with **28***b*, the terminal lugs of the first terminal bar **31** of the second bus bar **30** are designated with **36***b*, the terminal lugs of the second terminal bar **32** of the second bus bar **30** are designated with **37***b*, and the terminal lugs of the third terminal bar **33** of the second bus bar **30** are designated with **38***b*.

In the first end section A of the bus bar block **10**, power or voltage is supplied by means of a feed-in **50** using a first connecting contact **51** for the first two terminal bars **21**, **31** of the bus bars **20**, **30**, using a second connecting contact **52** for the two second terminal bars **22**, **32** of the bus bars **20**, **30** and a third connecting contact **53** for the two third terminal bars **23**, **33** of the bus bars **20**, **30**. For this purpose a first connection element **56** is provided, which has a first end section **56***a*, a second end section **56***b* and a connection **56***c*. The connection element **56** is approximately T-shaped, with the two end sections **56***a*, **56***b* situated at the ends of the cross beam, while the connection **56***c* forms the main beam. For a mounted bus bar **20**, the first end section **56***a* makes a planar contact with the end section of the terminal lug **26***a* of the first terminal bar **21**, while the second end section **56***b*, for a mounted second bus bar **30**, makes a planar contact with the free end section of the terminal lug **36***a* of the first terminal bar **31** of the second bus bar **30** and thus creates an electro-conductive connection between the first terminal bar **21** of the first bus bar **20** and the first terminal bar **31** of the second bus bar **30**. The connection **56***c* leads to the first connecting contact **51**, which can be used to supply power or voltage to the two first terminal bars **21**, **31** of the bus bars **20**, **30**.

A second connection element **57** with a first end section **57***a*, a second end section **57***b*, and a connection **57***c* similarly connects the second terminal bar **22** of the first bus bar **20** and the second terminal bar **32** of the second bus bar **30** by means of the terminal lugs **27***a*, **37***a*, with the connection to the second connecting contact **52** being formed by the connection **57***c*.

Finally, a third connection element **58** with a first end section **58***a*, a second end section **58***b*, [and] a connection **58***c* connects the third terminal bar **23** of the first bus bar **20** with the third terminal bar **33** of the second bus bar **30** by means of the appropriate terminal lugs **28***a*, **38***a*, with the connection to the third connecting contact **53** being formed by the connection.

By means of the connecting contacts **51**, **52**, **53** of the feed-in **50**, the three usual phases can be connected to the bus bar block **10**, and by means of the terminal bars **21**, **22**, **23**, **31**, **32**, **33** respectively, the various machines **80** can be attached. The feed-in **50** preferably has an enclosure, which is arranged on the base plate **40***a* and, in particular, is a part of the holding device **40**. For example, the feed-in **50** may also be integrated in the support **41***a*.

FIGS. **2***a* to **2***f* show different views of a second embodiment example of a bus bar block **10'**. The bus bar block **10** is largely identical to the bus bar block **10** illustrated in FIGS. **1***a* to **1***f*; therefore, the same parts are designated with the same reference numbers in the figures. However, for clarity, not all reference numbers are noted on all figures.

The bus bar block **10'** in accordance with the second embodiment example of the invention is different from the bus bar block **10** in accordance with the first embodiment example of the invention merely in the design of the second end section B, in which an additional connection between the respective terminal bars **21**, **31** or **22**, **32** or **23**, **33** of the bus bar block **20**, **30** is formed. For this purpose, a first joining element **61** with a first end section **61***a* and an end section **61***b* is provided, which, along with the first end section **61***a*, is in planar contact with the free end section of the terminal lug **26***b* when the bus bar **20** is mounted, while the second end section **61***b* is in planar contact with the free end section of the terminal lug **36***b* when the second bus bar **30** is mounted. This forms an additional electro-conductive connection between the first terminal bar **21** of the first bus bar **20** and the first terminal bar **31** of the second bus bar **30**. Similarly, the second terminal bar **22** of the first bus bar **20** is connected with the second terminal bar **32** of the second bus bar **30** by means of a second joining element **62**, which has a first end section **62***a* and a second end section **62***b*, with the first end section **62***a* being in contact with the free end section of the terminal lug **27***b* when the bus bar **20** is mounted, while the second end section **62***b* is in planar contact with the free end section of the terminal lug **37***b* when the second bus bar **30** is mounted.

Finally by means of a third joining element **63**, an electro-conductive contact is formed between the third terminal bar **23** of the first bus bar **20** and the third terminal bar **33** of the second bus bar **30**, such that the third joining element **63** is connected with a first end section **63***a* at the free end section of the terminal lug **28***b* and with a second end section **63***b* at the fee end section of the terminal lug **38***b*. The respective terminal bars **21**, **31** or **22**, **32** or **23**, **33** of the bus bars **20**, **30** are thus connected in parallel by means of the connection elements **56**, **57**, **58** and the joining elements **61**, **62**, **63**, so that higher voltage can be transferred to the bus bar block **10'**.

The FIGS. **3***a* to **3***f* show a third embodiment example of a bus bar block **10"**. The bus bar block **10"** in accordance with the third embodiment example of the invention is largely identical to the bus bar block **10** in accordance with the first embodiment example of the invention; therefore the same parts are designated with the same reference numbers. However, for clarity, not all reference numbers are noted on all figures.

The bus bar block **10"** in accordance with the third embodiment example of the invention is different from the bus bar block **10** in accordance with the first embodiment example of the invention in the design of the second end section B, in which a second feed-in **70** is provided with a fourth connecting contact **71**, a fifth connecting contact **72**, and a sixth connecting contact **73**. Comparable to the design in the first end section A, a fourth connection element **76**, a fifth connection element **77** and a sixth connection element **78** are provided, which connect the respective terminal bars **21**, **31** or **22**, **32** or **23**, **33** of the bus bars **20**, **30** with each other and with the connecting contacts **71**, **72**, **73**. For this purpose, the fourth connection element **76** has a first end section **76***a*, a second end section **76***b* and a connection **76***c*, with the first end section **76***a* being in contact with the terminal lug **26***b* of the first terminal bar **21** when the first bus bar **20** is mounted, while the second end section **76***b* is in contact with the terminal lug **36***b* of the first terminal bar **31** of the second bus bar **30** when the second bus bar **30** is mounted. By means of the connection **76***c*, a contact to the fourth connecting contact **71** is formed. Power fed-in over the first connecting contact **51** thus flows across the two first terminal bars **21**, **31** of the bus bars **20**, **30** up to the fourth connecting contact **71**.

The fifth connection element **77** has a first end section **77***a*, a second end section **77***b*, and a connection **77***c*, with the first end section **77***a* being in contact with the terminal lug **27***b* of the second terminal bar **22** of the first bus bar **20** and the second end section **77***b* being in contact with the terminal lug **37***b* of the second terminal bar **32** of the second bus bar **30**. By means of the connection **77***c*, the terminal bars **22**, **32** are connected with the fifth connecting contact **72**.

Finally, the sixth connection element **78** has a first end section **78***a*, a second end section **78***b*, and a connection **78***c*, with the first end section **78***a* being in contact with the terminal lug **28***b* of the third terminal bar **23** of the first bus bar **20** and the second end section **78***b* being in contact with the terminal lug **38***b* of the third terminal bar **33** of the second bus bar **30**, and by means of the connection **78***c*, the terminal bars **23**, **33** are connected with the sixth connecting contact **73**.

By means of the second feed-in **70**, it is thus possible to connect several of such bus bars blocks **10"** in a row.

Preferably, the feed-in **70** has an enclosure which is arranged on the base plate **40***a* and, in particular, is part of the holding device **40**. For example, the feed-in **70** may also be integrated into the support **41***c*.

REFERENCE NUMBER LIST

10 Bus bar block
10' Bus bar block
10" Bus bar block
20 First bus bar
25 Enclosure
25*a* Side
25*b* Base side
21 First terminal bar
22 Second terminal bar
23 Third terminal bar
26 Terminal lug
26*a* Terminal lug
26*b* Terminal lug
27 Terminal lug
27*a* Terminal lug
27*b* Terminal lug
28 Terminal lug
28*a* Terminal lug
28*b* Terminal lug
30 Second bus bar
35 Enclosure
35*a* Side
35*b* Base side
31 First terminal bar
32 Second terminal bar
33 Third terminal bar
36 Terminal lug
36*a* Terminal lug
36*b* Terminal lug
37 Terminal lug
37*a* Terminal lug
37*b* Terminal lug
38 Terminal lug
38*a* Terminal lug
38*b* Terminal lug
40 Holding device
40*a* Base plate
41*a* Support
41*b* Support
41*c* Support
42*a* Clamp
42*b* Clamp
42*c* Clamp
45 Fastening device
46 Intermediate element
50 Feed-in
51 First connecting contact
52 Second connecting contact
53 Third connecting contact
56 First connection element
56*a* First end section
56*b* Second end section
56*c* Connection
57 Second connection element
57*a* First end section
57*b* Second end section
57*c* Connection
58 Third connection element
58*a* First end section
58*b* Second end section
58*c* Connection
61 First joining element
61*a* First end section
61*b* Second end section
62 Second joining element
62*a* First end section
62*b* Second end section
63 Third joining element
63*a* First end section
63*b* Second end section
70 Feed-in
71 Fourth connecting contact
72 Fifth connecting contact
73 Sixth connecting contact
76 Fourth connection element
76*a* First end section
76*b* Second end section
76*c* Connection
77 Fifth connection element
77*a* First end section
77*b* Second end section
77*c* Connection
78 Sixth connection element
78*a* First end section
78*b* Second end section
78*c* Connection
80 Machine
90 Top-hat rail
91 Slot hole
A First end section
B Second end section

I claim:

1. A bus bar block comprising: a first bus bar and a second bus bar, each of which has an insulating enclosure, which is at least partially open on one side across from a base side, with, in each enclosure, at least one terminal bar being arranged on which several terminal lugs are arranged such that they protrude from the enclosure in sections through the at least partially open side, with the two bus bars being arranged on a holding device such that their base areas are facing each other, with the holding device for each terminal bar of one of the two bus bars having an electro-conductive connection element, which is connected with a first end section using one of the terminal lugs of a terminal bar of the first bus bar and with a second end section using one of the terminal lugs of a terminal bar of the second bus bar and such that it makes a connection to a connection contact.

2. The bus bar block according to claim **1** further characterized in that the connecting contact or the connecting contacts are arranged in the holding device.

3. The bus bar block according to claim 2 further characterized in that both bus bars are assembled identically.

4. The bus bar block according to claim 3 further characterized in that every bus bar has two, three or four terminal bars, with a separate chamber being provided in the insulating enclosure for each terminal bar.

5. The bus bar block according to claim 4 further characterized in that the connection elements are constructed such that their end regions make planar contact with their respective terminal lugs when a bus bar is mounted on the holding device.

6. The bus bar block according to claim 5 further characterized in that the holding device is designed such that the connection elements can be connected with the terminal lugs of the bus bar, which are arranged in a first end section of the bus bar.

7. The bus bar block according to claim 6 further characterized in that the holding device for each terminal bar of one of the bus bars has a joining element that can be connected with a joining element first end section using one of the terminal lugs of one of the terminal bars of the first bus bar and with a joining element second end section using one of the terminal lugs of one of the terminal bars of the second bus bar.

8. The bus bar block according to claim 7 further characterized in that the joining elements can be connected with the terminal lugs of the bus bars, which are arranged in a second end section.

9. The bus bar block according to claim 8 further characterized in that the holding device for each terminal bar of one the two bus bars has two electro-conductive connection elements, with the two connection elements able to be connected with the terminal lugs of the bus bars, which are arranged in the end sections of the bus bars.

10. The bus bar block according to claim 9 further characterized in that the holding device has two top-hat rails, which are arranged relative to the bus bars such that connectable machines can be mounted to the terminal lugs.

11. The bus bar block according to claim 10 further characterized in that every top-hat rail can be mounted variably on a fastening device relative to the bus bars.

12. The bus bar block according to claim 11 further characterized in that every top-hat rail has slot holes for adjusting the distance between the bus bar and the top-hat rail.

13. The bus bar block according to claim 12 further characterized in that between the top-hat rails and the fastening device there is at least one, preferably several, intermediate elements used to adjust the relative height.

14. The bus bar block according to claim 1 further characterized in that both bus bars are assembled identically.

15. The bus bar block according to claim 1 further characterized in that every bus bar has two, three or four terminal bars, with a separate chamber being provided in the insulating enclosure for each terminal bar.

16. The bus block according to claim 1 further characterized in that the connection elements are constructed such that their end regions make planar contact with their respective terminal lugs when a bus bar is mounted on the holding device.

17. The bus bar block according to claim 1 further characterized in that the holding device is designed such that the connection elements can be connected with the terminal lugs of the bus bar, which are arranged in a first end section of the bus bar.

18. The bus bar block according to claim 1 further characterized in that the holding device for each terminal bar of one of the bus bars has a joining element that can be connected with a first end section using one of the terminal lugs of one of the terminal bars of the first bus bar and with a second end section using one of the terminal lugs of one of the terminal bars of the second bus bar.

19. The bus bar block according to claim 1 further characterized in that the holding device for each terminal bar of one the two bus bars has two electro-conductive connection elements, with the two connection elements able to be connected with the terminal lugs of the bus bars, which are arranged in the end sections of the bus bars.

20. The bus bar block according to claim 1 further characterized in that the holding device has two top-hat rails, which are arranged relative to the bus bars such that connectable machines can be mounted to the terminal lugs.

21. The bus bar block according to claim 20 further characterized in that every top-hat rail can be mounted variably on a fastening device relative to the bus bars.

22. The bus bar block according to claim 21 further characterized in that every top-hat rail has slot holes for adjusting the distance between the bus bar and the top-hat rail.

23. The bus bar block according to claim 21 further characterized in that between the top-hat rails and the fastening device there is at least one, preferably several, intermediate elements used to adjust the relative height.

24. The bus bar block according to claim 2 further characterized in that every bus bar has two, three or four terminal bars, with a separate chamber being provided in the insulating enclosure for each terminal bar.

25. The bus bar block according to claim 2 further characterized in that the connection elements are constructed such that their end regions make planar contact with their respective terminal lugs when a bus bar is mounted on the holding device.

26. The bus bar block according to claim 2 further characterized in that the holding device is designed such that the connection elements can be connected with the terminal lugs of the bus bar, which are arranged in a first end section of the bus bar.

27. The bus bar block according to claim 3 further characterized in that the connection elements are constructed such that their end regions make planar contact with their respective terminal lugs when a bus bar is mounted on the holding device.

28. The bus bar block according to claim 3 further characterized in that the holding device is designed such that the connection elements can be connected with the terminal lugs of the bus bar, which are arranged in a first end section of the bus bar.

29. The bus bar block according to claim 4 further characterized in that the holding device is designed such that the connection elements can be connected with the terminal lugs of the bus bar, which are arranged in a first end section of the bus bar.

30. The bus bar block according to claim 6 further characterized in that the joining elements can be connected with the terminal lugs of the bus bars, which are arranged in a second end section.

31. A bus bar block comprising:

a) a first bus bar and a second bus bar, each of which has an insulating enclosure, which is at least partially open on one side across from a base side, with, in each enclosure, at least one terminal bar being arranged on which several terminal lugs are arranged such that they protrude from the enclosure in sections through the at least partially open side, with the two bus bars being arranged on a holding device such that their base areas are facing each other, with the holding device for each terminal bar of one of the two bus bars having an electro-conductive

connection element, which is connected with a first end section using one of the terminal lugs of a terminal bar of the first bus bar and with a second end section using one of the terminal lugs of a terminal bar of the second bus bar and such that it makes a connection to a connection contact;

b) wherein the connecting contact or the connecting contacts are arranged in the holding device;

c) two top-hat rails on the holding device, which are arranged relative to the bus bars such that connectable machines can be mounted to the terminal lugs; and

d) means to variably mount every top-hat rail on a fastening device relative to the bus bars.

* * * * *